

Motorola

HOME RADIO

S E R V I C E M A N U A L

MODELS

64X1 MAHOGANY
64X2 EMERALD GRN

CHASSIS
HS-440

GENERAL INFORMATION

TYPE - AC/DC operated table model superheterodyne receiver with loop antenna

TUNING RANGE - 535 to 1620 Kc IF - 455 Kc

TUBE COMPLEMENT - 12BA6 RF amp; 12BE6 conv; 12BA6 IF amp; 12AT6 Det, AVC, 1st AF amp; 35C5 pwr amp; 35W4 rect.

POWER SUPPLY - 117 volts AC or DC; 30 watts

SERVICE NOTES

PHONOGRAPH CONNECTION

To play a portable phonograph through the radio, plug the shielded lead from the phonograph into the "PHONO INPUT" receptacle. Insertion of the plug into the receptacle automatically switches the set from radio to phonograph operation. Remove the plug for radio reception.

USE OF ISOLATION TRANSFORMER

The chassis of this receiver is connected directly to the power line, however, the power cord circuit is broken by an interlock when the cabinet rear cover is removed. When servicing or aligning this chassis from AC, an isolation transformer should be inserted between the power line and the chassis.

NOTES:

1. Reverse the line cord plug in the wall outlet if radio does not operate from DC. When operating from AC, reversing the line cord plug in the wall outlet may sometimes improve reception.
2. CAUTION: Never connect the radio chassis to water pipe, radiator, or other ground,

TO REMOVE THE CHASSIS FROM THE CABINET

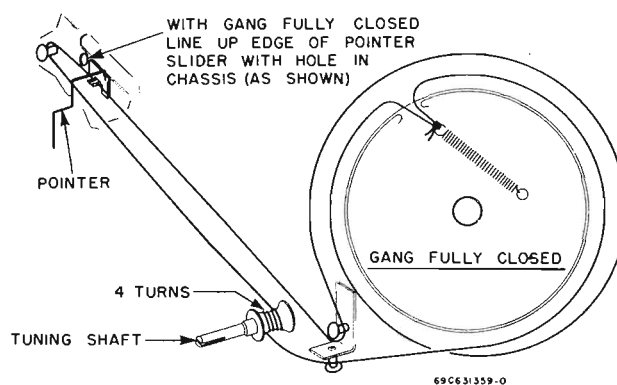
1. Pull off the control knobs.
2. Remove four screws which hold the rear cover to the cabinet. Disconnect the loop leads.
3. Disconnect the speaker leads.
4. From the back of the cabinet, remove the two hex head chassis mounting screws.
5. Remove hex head chassis mounting screw from bottom of cabinet.
6. Slide the radio chassis from the cabinet.



SPEAKER PHASING

THE SPEAKERS MUST BE IN PHASE OR A LOSS OF THE LOW FREQUENCIES WILL RESULT.

Phasing can be checked by momentarily connecting a 1-1/2 volt flashlight cell in parallel with the output transformer secondary and noting that the cones of all speakers move in the same direction. If they do not, reverse the connections of one speaker.



MOTOROLA, INC. 4545 AUGUSTA BLVD. CHICAGO 51, ILLINOIS

Part No. 68P633300

Price 5 Cents

Printed in U.S.A.

ALIGNMENT

Use an isolation transformer between the power line and the receiver. If not available, connect low side of generator to ground (outer chassis edges) through a .1 mf capacitor.

Connect a low range output meter across speaker voice

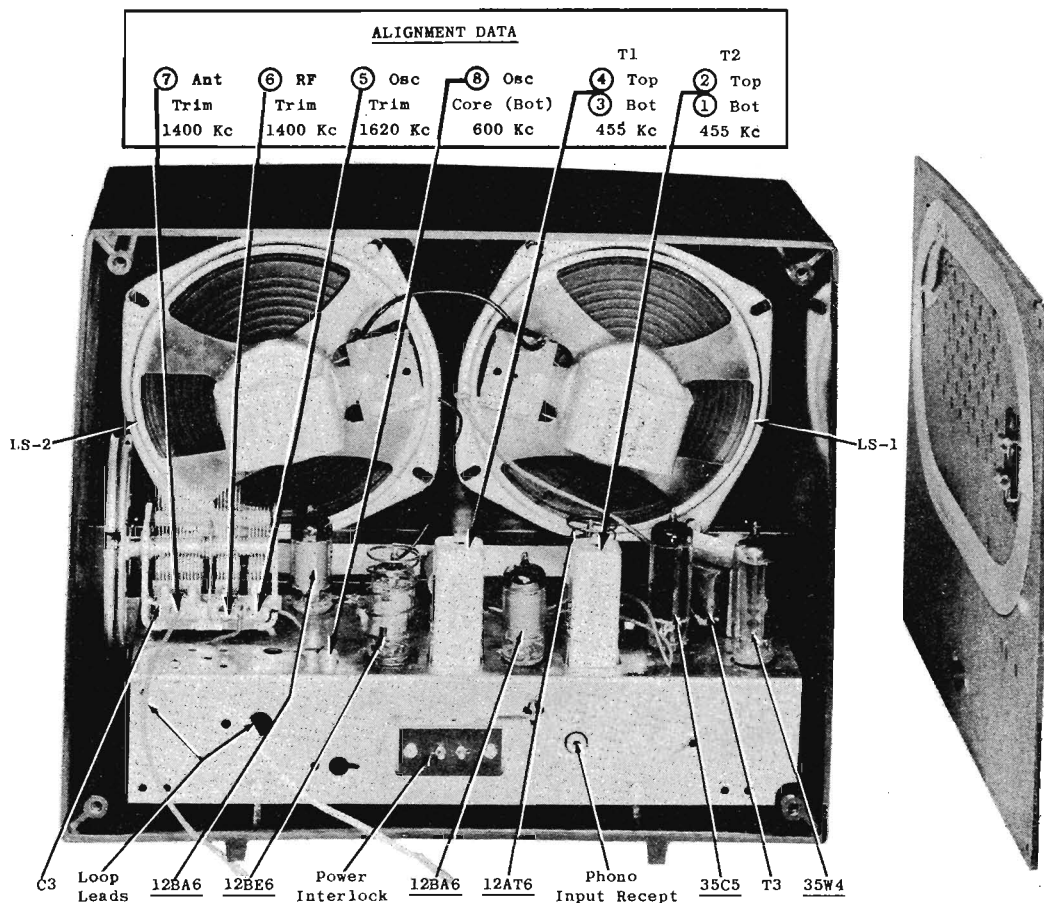
coil and set volume control to maximum.

Set signal generator output to produce .565 volts across voice coil. As stages are aligned, reduce generator output to maintain the .565 volt level to avoid overloading receiver.

STEP	DUMMY ANTENNA	GENERATOR CONNECTION	GENERATOR FREQUENCY (400 cycle mod)	GANG SETTING	ADJUST	REMARKS
IF ALIGNMENT						
1.	.1 mf	Grid of conv. (pin 7, 12BE6)	455 Kc	Fully open	1, 2, 3 & 4 (IF cores)	Adjust for maximum. Use insulated screwdriver.
RF ALIGNMENT						
2.	.1 mf	Ant section of gang (green loop lead)	1620 Kc	Fully open	5 (Osc trim)	Adjust for maximum.
3.	.1 mf	Ant section of gang (green loop lead)	1400 Kc	Tune for max	6 (RF trim)	Adjust for maximum.
4.	-	Radiation loop*	1400 Kc	Tune for max	7 (Ant trim)	Adjust for maximum.
5.**	-	Radiation loop*	600 Kc	Tune for max	8 (Osc core)	Simultaneously tune gang and adjust core for maximum signal.
6.**	-	Radiation loop*	1620 Kc	Fully open	5 (Osc trim)	Readjust for maximum.
7.**	-	Radiation loop*	1400 Kc	Tune for max	6 & 7 (RF & ant trim)	Readjust for maximum.

*Connect generator output across 5" diameter, 5 turn loop and couple inductively to receiver loop. Keep loops at least 12" apart.

**Steps 5, 6 and 7 need not be performed unless receiver is off calibration or mistracks badly at low frequencies.



REPLACEMENT PARTS LIST

NOTE: When ordering parts, specify model number of set in addition to part number and description of part.

Ref. No.	Part. Number	Description	List Price	Part Number	Description	List Price
ELECTRICAL PARTS				MECHANICAL PARTS		
Capacitors				*7B632446	Bracket, dial scale background....	.40
C-1	8R9821	Paper: .05 mf 200V.....	.25	42A75825	Clip, electrolytic mtg.....	.05
C-2	8R9821	Paper: .05 mf 200V.....	.25	42B485548	Clip, IF trans mtg.....doz	.35
C-3	19C630633	Variable, 3-gang: with pulley.....	3.70	5A19658	Eyelet, spacer (gang mtg).....doz	.25
C-4	21R410036	Ceramic Disc: 100 mmf 750V..	.25	5A70404	Grommet, rubber (gang mtg).....	.05
C-5	8K72686	Paper: .15 mf 200V.....	.30	29A620057	Lug, terminal (loop leads).....doz	.25
C-6	8K490232	Paper, molded: .047 mf 400V..	.30	2S7051	Nut, hex palnut: 3/8-32 x 9/16 (vol cont mtg).....doz	.15
C-7	21B482847	Multiple Capacitor Plate....	.65	28K712319	Plug, line cord.....	.15
C-8	*8R9813	Paper: .005 mf 600V.....	.40	*52A632573	Pointer & Slider Assem.....	.35
C-9	21R482726	Ceramic Disc: .01 mf 500V..	.35	8A620836	Receptacle, phono input.....	.50
C-10	8R9802	Paper: .02 mf 400V.....	.25	*1V632508	Shaft, tuning.....	.50
C-11	23B484234	Electrolytic: 40-20-20 mf/150V.....	1.95	26A481521	Shield, spring (for 12BA6, 12AT6).....doz	.50
C-12	21R482726	Ceramic Disc: .01 mf 500V..	.35	*9A632443	Socket, dial light.....	.35
C-13	8R9816	Paper: .05 mf 400V.....	.25	9R119819	Socket, tube: miniature; 7-prong; with dummy lug & center shield...doz	.15
L-1	*1V632513	Ant Loop & Panel Assem: incl line cord.....	2.30**	41A14244	Spring, tension (gang drive cord).....doz	.55
L-2	24B630714	Coil, RF.....	1.15	4K692188	Washer, "C" (tuning shaft retaining).....doz	.20
L-3	24B630610	Coil, oscillator.....	1.30			
LS-1	50C632453			CABINET PARTS		
or	50C632846	Speaker, PM: 5-1/4"; 3.2 ohm VC.....	4.20**	*13B632461	Background, dial (gold).....	.20
		exch	3.15	*16E632456	Cabinet, plastic: mahogany (64X1)	***
LS-2	50K632642			*16K632492	Cabinet, plastic: emerald green (64X2).....	***
or	50K632847	Speaker, PM: 5-1/4"; 3.2 ohm VC.....	4.20**	30K610638	Cord, line: with plug & recept...doz	.95
		exch	3.15	*13C632489	Escutcheon, dial (gold).....	.95
I-1	65X11854	Bulb, dial light: #47.....	.15	*36K632494	Knob, tuning: mahogany (64X1)....	.70
Resistors - Note: All resistors are insulated carbon type unless otherwise specified.				*36K632496	Knob, volume: mahogany (64X1)....	.55
R-1	6R6075	100,000 20% 1/2W.....doz	1.20	*36K632498	Knob, tone: mahogany (64X1).....	.25
R-2	6R6326	100 10% 1/2W.....doz	1.20	*36K632495	Knob, tuning: green (64X2).....	.65
R-3	6R6291	560 10% 1/2W.....doz	1.20	*36K632497	Knob, volume: green (64X2).....	.55
R-4	6R6028	22,000 20% 1/2W.....doz	1.20	*36K632499	Knob, tone: green (64X2).....	.30
R-5	6R6018	100 20% 1/2W.....doz	1.20	*33B632103	Nameplate, Motorola.....	.20
R-6	6R2118	3.3 meg 20% 1/2W.....doz	1.20	34C632455	Scale, dial.....	.35
R-7A,B	18B632452	Volume & Tone Control: dual; vol 1 meg tapped 300K; tone 1 meg; with sw.....	2.00			
R-8	6R2109	10 meg 20% 1/2W.....doz	1.20			
R-9	6R6012	33,000 20% 1/2W.....doz	1.20			
R-10	6R6032	470,000 20% 1/2W.....doz	1.20			
R-11	6R5683	27 10% 1/2W.....doz	1.20			
R-12	6R6032	470,000 20% 1/2W.....doz	1.20			
R-13	6R3992	150 20% 1/2W.....doz	1.20			
R-14	6R3953	1000 20% 1W.....	.20			
R-15	6R488025	100 20% 1W.....	.20			
R-16	6R6004	1 meg 20% 1/2W.....doz	1.20			
T-1,2	24C485553	Trans, 1st & 2nd IF: 455 Kc	1.45			
T-3	*25C632819	Trans, output.....	1.90			

PRICES SUBJECT TO CHANGE WITHOUT NOTICE
 *New Item, Appears in any List for First Time
 **Plus Federal Excise Tax at Current Rate
 ***Prices Furnished Upon Request